

Seat No.	
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**S.E. (Civil) (Semester - III) Examination, 2013**

**SURVEYING - I**

**Sub. Code : 42655**

**Day and Date : Friday, 31 - 05 - 2013**

**Total Marks :100**

**Time : 2.30 p.m. to 5.30 p.m.**

- Instructions :**
- 1) Answer any three questions from each section.
  - 2) Figures to the right indicate full marks.
  - 3) Assume suitable data if necessary and state them clearly.
  - 4) Answers shall be supported by adequate sketches.

**SECTION - I**

- Q1) a)** Describe the field procedure to be followed while determining sensitivity of a bubble tube. Also derive the corresponding equation. [8]
- b) What is the basic principle behind plane table survey? What do you understand by the term orientation? [4]
- c) How the capacity of a reservoir is evaluated using a contour map. [5]
- Q2) a)** What is the intention behind permanent adjustments of an instrument? Explain two peg test for a tilting level. [8]
- b) Following data gives the observations with a Dumpy level during reciprocal levelling operation. Find
- i) True Reduced level of B
  - ii) Combined correction of curvature and refraction
  - iii) Error due to collimation.

Instrument near	Staff Readings on		Remarks
	A	B	
A	1.150	2.320	Dist. AB = 1.10 kms
B	0.655	1.815	RL of A = 505.125 m

[8]

- Q3) a) What do you understand by the term zero circle in planimeter? Describe different methods of obtaining the area of zero circle. [7]
- b) Following offsets from a traverse line to an irregular boundary were measured and the data is as under. Calculate the area between the traverse line and the irregular boundary in hectares by
- Trapezoidal Rule.
  - Simpson's Rule.

Chain ages (m)	0	5	10	15	20	25	30	35	40
Offsets (m)	6.15	10.92	9.03	11.58	14.22	12.33	9.72	10.32	7.65

[10]

- Q4) Write notes on the following : [16]
- Telescopic alidade.
  - Precise levelling operation.
  - Special features in Auto level.
  - Necessity of equalising back sight and fore sight distances.

**SECTION - II**

- Q5) a) Write stepwise procedure for temporary adjustments of a Transit theodolite. [6]
- b) What do you understand by the terms [6]
- Transiting.
  - Swinging.
  - Telescope inverted position.
- c) Explain how you would set  $38^{\circ}47'20''$  right deflection angle using a transit theodolite. Support your explanation with a neat sketch. [5]

- Q6) a) Following observations were made in a closed theodolite traverse ABCDA.

Line	AB	BC	CD	DA
Length in m	68.4	80.2	102.4	139.4
WCB	Due North	$270^{\circ}$	$215^{\circ}$	$83^{\circ}$

Determine :

- i) Magnitude and Reduced Bearing of closing error. [5]
  - ii) Corrected consecutive coordinates by Transit rule. [5]
- b) Explain Spire test. [7]

Q7) a) Find the elevation of the top of a chimney from the following data.

Inst. Stn.	Staff Rdg. on BM	Vertical Angle	Remarks
A	0.865 m	18°36'0"	RL of BM = 421.380 m
B	1.220 m	10°12'0"	Dist. AB = 50 m

Stations A, B and the top of chimney are in the same vertical plane. [8]

- b) What do you understand by omitted measurements? Discuss briefly the different cases. [8]

- Q8) a) Explain the different methods of locating soundings. [5]
- b) Discuss the construction and uses of Box Sextant. [6]
- c) Explain the use of Transit theodolite in setting out the alignment for a tunnel. [5]

